Glimpse

Web Platform for 3D Content

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Introduction

Background

- Kinetic Vision is very used to working with a leveraging 3D data across a variety of mediums
- Web-based services have increasingly become a way to deploy and visualize 3D models
- Traditionally, KV has used one-off custom solutions for delivering 3D experiences on the web

Goals

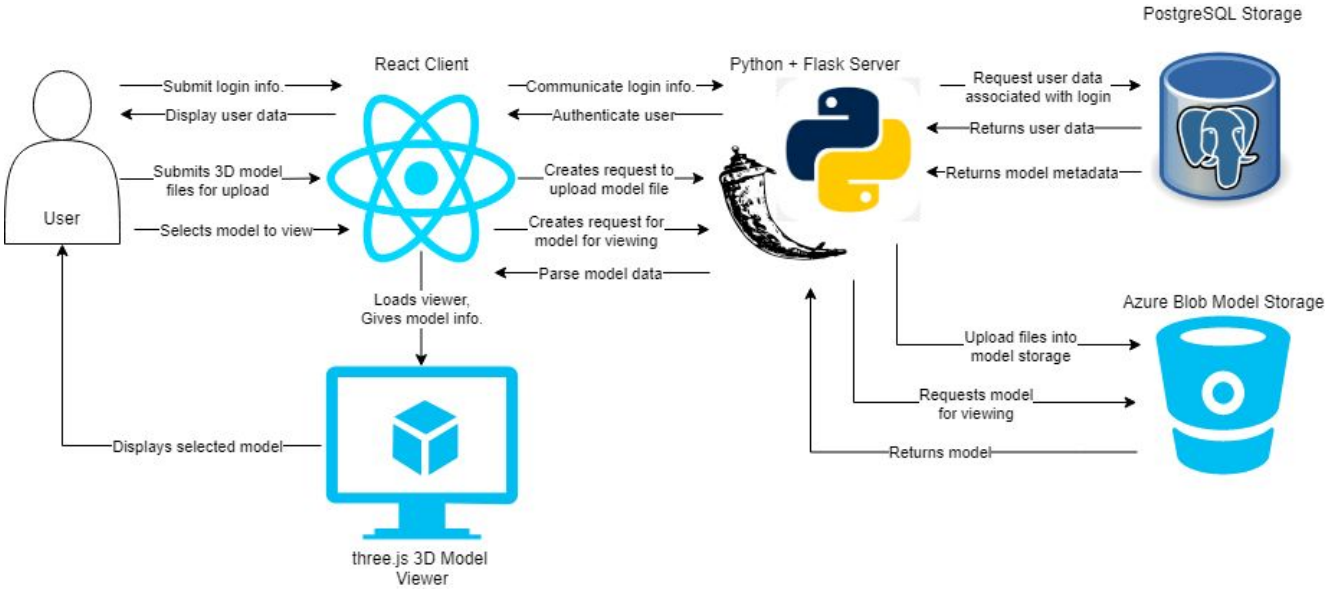
- Create a standardised web solution for providing such 3D experiences across a variety of different projects
- Allow for viewing and storing 3D content of various types
- Implement a simple and intuitive client GUI
- Develop a Kinetic Vision specific web platform for managing 3D content

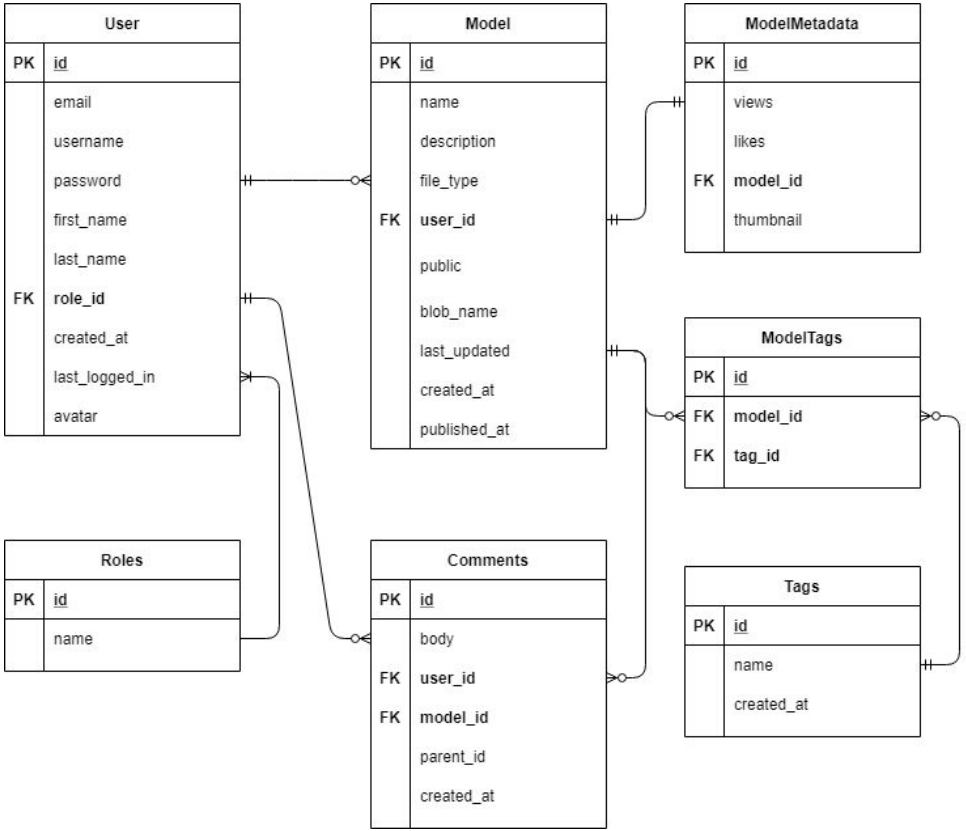
Merits & Achievements

- Cohesive platform for managing and visualizing 3D content on the web
  - Including mobile AR viewing
- Single, lightweight codebase that can be reused and expanded upon in the future
- Server application that provides access to server functions, database operations, and file storage within Microsoft Azure, all in one API
- Client application utilizing modern web technologies, including ReactJS and three.js, to present users with a stable, modern, easy-to-use interface

System Architecture

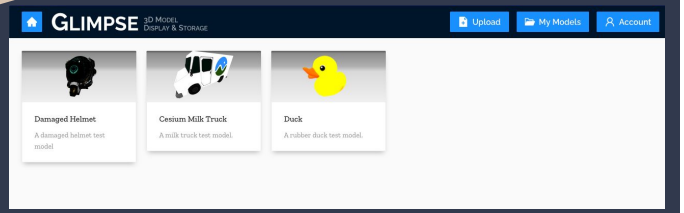
- 2 main components: the Client and Server
- The client allows users to upload, download, view, and interact with models
- The server handles the data and model storage as well as the pathways to fetch that data as needed
- Data is passed between the client and server through a encrypted SSL tunnel





PostgreSQL Database Structure

Results



- Developed a viewer for 3D content using three.js and react-three-fiber
- Built front-end using ReactJS and Typescript
- Our Python back-end implements SQLAlchemy to work with the PostgreSQL database
- The back-end exposes a Graphene + GraphQL API to allow the client to query and manipulate the database
- An Azurite instance emulates Azure Blob Storage, and the Python back-end provides access to it
- A staging environment has been deployed via an Azure virtual machine